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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/702,280	10/30/2000	Yonglin Huang	NFCS-00-016	3667

26211 7590 12/20/2002

FISH & RICHARDSON P.C.
45 ROCKEFELLER PLAZA, SUITE 2800
NEW YORK, NY 10111

EXAMINER

CURTIS, CRAIG

ART UNIT	PAPER NUMBER
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2872

DATE MAILED: 12/20/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.
09/702,280

Applicant(s)
Huang et al.

Examiner
Craig Curtis

Art Unit
2872



-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on Nov 18, 2002
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2-6 and 22-37 is/are pending in the application.
- 4a) Of the above, claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 2-6 and 22-37 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
*See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____ 6) ☐ Other:

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DETAILED ACTION
Disposition of the Application

- This Office action is responsive to Applicants' Amendment C filed on 18 November 2002 and made of record in the file as Paper No. 13.
- By this amendment, Applicants have amended claims 2 and 22-37. Claims 2-6 and 22-37 are currently pending in the instant application.

Claim Rejections 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

- I. Claims 2-6 and 22-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cheng (U.S. 6,014,256) in view of Konno et al. (JP04335304).

The Cheng patent teaches (See Figure 3a) all of the claimed elements EXCEPT FOR an explicit teaching of the use of polarization maintaining fibers, the use of two lenses (a collimating and focusing lens), the use a birefringent walk-off crystal having a first face at an angle to said first optical axis to reduce an optical reflection, and the recited specific size ranges of the device.

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As can be seen, there is a first fiber (16c) defining a first axis, a second fiber (16a) defining a second axis, and a third fiber (16b) defining a third axis which is parallel to and spaced apart from the second axis. There is also a focusing lens (32) and a birefringent walk-off crystal (30) which has a first face adjacent to the lens and a second face in contact with the second and third fibers and at the focal point of the focusing lens. In terms of the fibers, it is believed at least obvious, if not inherent, that the Cheng device uses polarization maintaining fibers, since said device is used as a polarization beam splitter, which necessitates the exiting fibers (16a, 16b) maintaining the polarization states of the exiting beams.

As for the use of two lenses, one for collimating and one for focusing, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the device of Cheng such that it include, as set forth in the claims, both a collimating lens and a focusing lens in place of the single lens (32) taught by Cheng (the substitution of two or more lenses for a single lens being notoriously old and well known in the art), for at least the purpose of minimizing errors in alignment between said focusing lens and said first optical fiber on an object side of said focusing lens, as well as errors in alignment between said focusing lens and said second and third optical fibers on an imaging side of said focusing lens, the positional demands associated with a single lens having to satisfy both conjugate relations far exceeding those encountered when each lens has one infinite conjugate (i.e., one side on which light is collimated).

With regard to lack of a teaching by Cheng of the use a birefringent walk-off crystal having a first face at an angle to said first optical axis to reduce an optical reflection, Applicants are directed to the

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teaching by Konno et al. of a birefringent crystal (15) having a first face (See Fig. 1) at an angle to a first optical axis to reduce an optical reflection (See Abstract: Purpose). It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the device of Cheng such that its birefringent walk-off crystal have a first face at an angle to said first optical axis to reduce an optical reflection first face at an angle to said first optical axis to reduce an optical reflection, as motivated and taught by Konno et al., for at least the purpose of decreasing coupling losses between said fibers by reducing an optical reflection at said first face of said birefringent walk-off crystal.

And finally, with regard to the specific dimensions and separations recited in the claims, it is noted that Cheng describes (col. 3, l. 55) the crystal of Fig. 3a being 1/50th the size of a conventional splitter/combiner device. Such teaching necessarily embodies a reduction in said separations between, and other dimensional aspects of, components comprising the device of Cheng which would have been obvious to one having ordinary skill in the art at the time the invention was made, for at least the purpose of achieving a more compact device, since the Federal Circuit has held that, where the only difference between the prior art and the claims was a recitation of relative dimensions of the claimed device and a device having the claimed dimensions would not perform differently than the prior art device, the claimed device was not patentably distinct from the prior art device. *Gardner v. TEC Systems, Inc.*, 725 F.2d 1338, 220.

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Response to Arguments

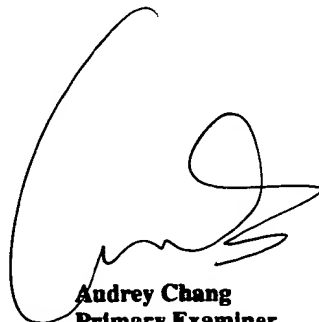
2. Applicants' arguments filed 18 November 2002 have been fully considered but they are moot in view of the new ground(s) of rejection.

Contact Information

3. Any inquiry concerning this or earlier communications from the examiner should be directed to Craig Curtis, whose telephone number is (703) 305-0776. The facsimile phone number for Art Unit 2872 is (703) 308-7721.

Any inquiry of a general nature regarding the status of this application should be directed to the Group receptionist, whose telephone number is (703) 308-0956.


Craig H. Curtis
Group Art Unit 2872
10 December 2002


Audrey Chang
Primary Examiner
Technology Center 2800